
Succession Communication Server for Enterprise 1000
X21 Release 2.0

Installation and Configuration

Document Number: 553-3023-210
Document Release: Standard 3.00
Date: April 2003

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Revision history

April 2003	Standard 3.00. This document is up-issued to support the Succession Communication Server for Enterprise 1000, Release 2.0.
November 2002	Standard 2.00. This document is up-issued to support the Succession Communication Server for Enterprise 1000, Release 2.0.
June 2001	Standard 1.00. This document is issued for the first release of the Succession Communication Server for Enterprise 1000.

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About this document

This document is a global document. Contact your system supplier or your Nortel Networks representative to verify that the hardware and software described is supported in your area.

Subject

This document provides the information necessary to install and configure a Succession Communication Server for Enterprise (CSE) 1000 system.

Intended audience

This document is for those responsible for installing and configuring the Succession Communication Server for Enterprise (CSE) 1000 system.

Only qualified personnel should install Succession CSE 1000 systems. To use this document, you should have a basic knowledge of Succession CSE 1000 equipment and operation. Contact Nortel Networks Training Centers for information on installation courses. You should also read and fully understand the Succession CSE 1000 Nortel Networks Technical Publications (NTP) before you install a system.

Complete all system engineering and planning activities before using this guide to install a Succession CSE 1000 system.

Structure and conventions

This guide contains terms that are not common in the UK. The following is a list of these terms and their equivalents in the UK.

Table 1
List of terms

North American term	UK term or meaning
Analog (500/2500-type) set	Analog rotary dial/MF4 telephone
Central Office (CO)	Local Public Exchange
Cross-connect wire	Jumper wire
Direct Inward Dialing (DID)	Direct Dialing In (DDI)
E1	2.0 Mbit, 32 channel digital carrier (Megastream)
Grounding	Earthing
Set	Telephone
Station	Extension telephone
TIE trunks	Private circuits
Toll trunks	Exchange lines
T1	1.5 Mbit, 24 channel digital carrier (North American equivalent to Megastream)
WATS, FEX (FX1 and FX2), CSA	Alternative public vendor network services (used only in North America)

Safety instructions

Contents

This section contains information on the following topics:

Reference list	17
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Telephone equipment use	18

Reference list

There are no references for this section.

Introduction

This chapter alerts you to the safety issues involved in Succession CSE 1000 system installation.



WARNING
Failure to follow the safety instructions in this chapter could result in personal injury.



CAUTION
Damage to Equipment
Failure to follow the safety instructions in this chapter could result in damage to equipment.

Telephone equipment installation

The following are safety instructions for installing telephone equipment:

- Never install telephone wiring during a lightning storm.
- Never install telephone jacks in wet locations unless the jack is designed for wet locations.
- Never touch an uninsulated telephone wire or terminal unless the telephone line is disconnected at the network interface.
- Use caution when installing or modifying telephone lines.

Telephone equipment use

Always follow basic safety precautions when using telephone equipment to reduce the risk of fire, electric shock, and injury to persons, including the following:

- Follow all warnings and instructions marked on the product.
- Before you clean a telephone, remove the plug from the wall outlet. Do not use liquid cleaners or aerosol cleaners. Use a damp cloth for cleaning.
- Do not use the telephone near water (for example, near a tub or sink).
- Do not place the telephone on a piece of furniture that is unstable. The telephone can fall, causing serious damage to the telephone.
- Slots in the chassis and the telephone are for ventilation. These slots protect the equipment from overheating. Never block or cover these slots.

- Never block the openings on a telephone by placing the product on a surface like a bed, sofa, or rug. Never place the product near or over a radiator or heat register. Do not place the product in a built-in installation, unless there is correct ventilation.
- Only operate the product from the type of power source indicated on the marking label. If you are not sure of the type of power supply, check with your distributor.
- Some equipment has a three-wire grounding plug. This type of plug has a third grounding pin. As a safety feature, the plug only fits into an isolated ground outlet. If you cannot insert the plug completely into the outlet, contact your electrician to replace the outlet.
- Some equipment has a polarized line plug. This type of plug has one blade wider than the other. As a safety feature, this plug fits into the power outlet one way. If you cannot insert the plug completely into the outlet, try reversing the plug. If the plug continues to not fit, contact your electrician to replace the outlet.
- Do not place objects on the power cord. Do not locate the product where persons can walk on the plug.
- Do not overload wall outlets and extension cords as fire or electrical shock can result.
- Never push objects of any kind into the telephone through the slots. The objects can come in contact with dangerous voltage points. Also, parts can short out, causing the risk of fire or electrical shock.
- Never spill liquid of any kind on the product.
- To reduce the risk of electrical shock, do not disassemble a telephone product.
- Remove the telephone plug from the wall outlet and refer servicing to qualified personnel under the following conditions:
 - If the power supply cord or plug is damaged or worn.
 - If liquid has spilled into the telephone.
 - If the telephone has been exposed to rain or water.
 - If the telephone has been dropped or damaged.
 - If the product shows a distinct change in performance.

- If the telephone does not function correctly under normal operating conditions.
- Avoid using a telephone (except a type without a cord) during an electrical storm. There is a remote risk of electric shock from lightning.
- Do not use the telephone to report a gas leak in the area of the leak.

Installation procedure summary

Contents

This section contains information on the following topics:

Reference list	21
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Reference list

There are no references for this section.

Introduction

This chapter also provides a high-level summary of installation procedures for the Succession CSE 1000. Where applicable, the summary contains references to chapters that describe the procedures in more detail.

The following flow chart Figure 1 on page 22 is provided to show the general steps and dependencies of a new system's installation and configuration procedures. For optimum efficiency, you can choose to perform some steps in parallel or in a different order than laid out in this guide.

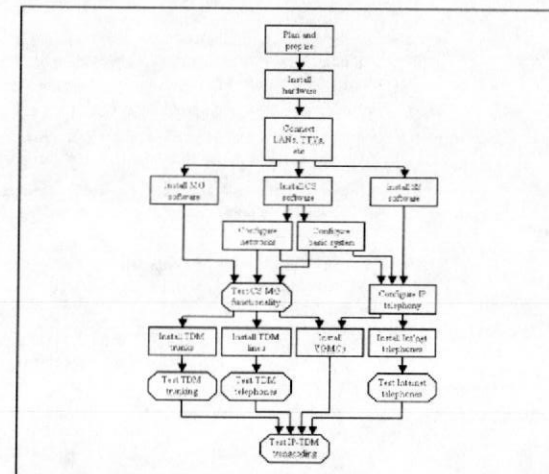
The flow chart identifies several "testing" steps:

- Test CS-MG functionality: the Call Server and Media Gateways have been installed and configured, and function together to provide call processing

- Test TDM trunking: the analog or digital trunks have been installed and configured, and are available for use
- Test TDM telephones: the analog or digital telephones have been installed and configured, and are available for use
- Test Internet telephones: the Internet Telephones have been installed and configured, and are available for use
- Test IP-TDM transcoding: the VGMCs have been installed and configured, and are available to provide transcoding between analog or digital telephony and IP telephony

Virtual trunking (IP peer telephony) can be tested once IP Peer Networking has been implemented. The configuration of this feature is outside the scope of this guide. For details, see the IP Peer Networking Guide.

Figure 1
Succession CSE installation/configuration flow chart



Summary of installation procedures

The following list summarizes the Succession CSE 1000 installation procedures. Refer to the chapters and procedures indicated at the beginning of each step for important and detailed information related to installation.

- 1 "Safety instructions" on page 17 alerts you to the safety issues involved when installing a Succession CSE 1000 system.
- 2 "Installation preparation" on page 27 contains planning, engineering, and tool checklists. This chapter outlines the Planning and Engineering that must be completed before you attempt to install a Succession CSE 1000 system.
- 3 "System components" on page 31 identifies the equipment components, chassis, cables, connector locations, and miscellaneous items, required for installing Succession CSE 1000 system.
- 4 "Chassis rack mount installation" on page 57 contains the procedures for mounting the various chassis/components into the customer supplied 19-inch chassis rack.
- 5 "System ground installation" on page 75 outlines the procedures and requirements for the system ground. Where applicable, a qualified electrician is required to install some or all grounds.
- 6 "Succession System Controller cards" on page 85 contains procedures to equip Call Server and Media Gateway chassis Succession System Controller cards with daughterboards, and security devices.
- 7 "System connections" on page 99 contains procedures to connect the Call Server to Media Gateway link connection, ELAN connections, and TLAN connections.
- 8 "System terminal setup and connections" on page 125 contains modem setup requirements and communication devices connections to the Succession CSE 1000.
- 9 "Call Server software installation" on page 111 describes the Software Installation Program and how to install system software on the Call Server SSC card.

- 10 "Call Server and Media Gateway network configuration" on page 139 describes how to use the command line interface LD 117 to create host entries with IP address on the ELAN subnet, and Call Server to Media Gateway links.
- 11 "Installing Media Gateway SSC software" on page 153 describes the software installation on the Media Gateway SSC card.
- 12 "Call Server and Media Gateway network verification" on page 159 describes how to check Call Server to Media Gateway links, and ELAN interfaces.
- 13 "Basic system telephony configuration" on page 167 describes the order required to configure the system with basic telephony features.
- 14 "Signaling Server software installation" on page 175 describes the Signaling Server software tool and how to install Signaling Server software in the Succession CSE 1000 system.
- 15 "IP Telephony node configuration" on page 205 describes how to configure Element Management passwords, configure pseudo-terminals, and import the pre-configured node files from the leader Signaling Server.
- 16 "Internet Telephone installation and configuration" on page 229 describes how to install and configure i2002, i2004, and i2050 Internet Telephones.
- 17 "Voice Gateway Media Card configuration and installation" on page 263 describes installation and configuration procedures for Voice Gateway Media Cards (VGMC) in the Media Gateways.
- 18 "System MDF layout and MDF connection" on page 301 describes how to install and connect a Succession CSE 1000 system using the BIX, Reichle Masari (Germany), or Krone Test Jack Frame (UK) cross-connect terminals.
- 19 "Analog/digital telephone installation and cross-connection" on page 317 contains instructions for connecting telephone line cards located in the Media Gateway and Media Gateway Expansion to the MDF cross-connect terminal.

- 20 "Trunk card installation and cross-connection" on page 339 contains instructions for connecting telephone line cards located in the Media Gateway and Media Gateway Expansion to the MDF cross-connect terminal.
- 21 "Power Failure Transfer Unit installation and cross-connection" on page 371 describes how to install a QUA6 Power Failure Transfer Unit (PFTU).
- 22 "External alarm from PFTU installation and cross-connection" on page 385 describes the procedures for connecting an external alarm to the Succession CSE 1000 system.
- 23 "Alternate Call Server and survivability configuration" on page 391 describes how to configure survivability on a new or existing Succession CSE 1000 system.
- 24 "IP Peer Networking and Gatekeeper management" on page 409 provides an outline for configuring the IP Peer Networking and managing the Gatekeeper database.

Installation preparation

Contents

This section contains information on the following topics:

Reference list	27
Introduction	27
Planning and engineering checklist	27
Tools checklist	30
Site and inventory inspection	30

Reference list

The following is the reference for this section:

- *Planning and Engineering Guidelines* (553-3023-102)

Introduction

This chapter contains planning, engineering, and tool checklists. Before beginning the installation, make sure you have all the tools necessary to install the Succession CSE 1000.

Planning and engineering checklist

Make sure that all the tasks outlined in the *Planning and Engineering Guidelines* (553-3023-102) are completed by your Planning and Engineering group.

You must have a work sheet, or plan, or instructions from your Planning and Engineering group with the details for following topics.

System and site requirements

- ☐ environmental concerns
- ☐ equipment layout plan and system location
- ☐ commercial power outlet location
- ☐ auxiliary power (UPS) available, if required
- ☐ ground point location
- ☐ rack mounting supplied by customer
- ☐ cross-connect terminals/equipment available
- ☐ cross-connect layout details
- ☐ trunks available
- ☐ modem, maintenance terminals (TTY), if required, capable of 19200 bit/s and VT100 emulation
- ☐ PC maintenance workstation with web browser Internet Explorer 5.5 for Element Management.
- ☐ layout for Media Gateway chassis' card slot locations for Voice Gateway Media Cards (VGMC), trunk cards, line cards, application cards

Data network infrastructure requirements

- ☐ subnet mask and gateway IP address for the ELAN subnet
- ☐ one IP address for the Call Server's ELAN connection
- ☐ one IP address for each Media Gateway SSC card's ELAN connection

- ☐ two IP addresses for each Call Server to Media Gateway link connection to a Layer 2 switch, or can use the pre-configured default IP addresses
- ☐ one IP address for the Signaling Server's ELAN connection
- ☐ one IP address for the Signaling Server's VGMC ELAN connection
- ☐ one IP address for the Signaling Server's TLAN connection
- ☐ one IP address for each VGMC card TLAN connection
- ☐ one IP address for the IP Telephony node TLAN connection
- ☐ subnet mask and gateway IP address for the TLAN subnet
- ☐ one IP address for each Internet Telephone customer network connection. (Obtained from the DHCP)
- ☐ WAN bandwidth adjusted for suitable VoIP
- ☐ QoS adjusted for suitable VoIP

Software requirements

- ☐ Call Server software on a pre-programmed Software Daughterboard or Software Delivery Card (PC Card)
- ☐ Feature set sheet with ISMs and keycodes
- ☐ Signaling Server software on a CD-ROM
- ☐ VGMC loadware pre-installed CompactFlash card on the VGMC or a separate CompactFlash card, customer installed
- ☐ IP terminal firmware pre-installed for the i2002, and i2004. The i2050 software is a Windows application.

Configuration data

- ☐ customer-supplied data sheets for Configuration Record, Customer Data Block, Route Data Block, Trunk Data Block, Digital Telephone, ESN, features and applications

Items missing from the Planning and Engineering checklist can result in increased installation time, a degradation in system operation, or possible system failure.

Tools checklist

To install the system correctly, make sure that the following tools are available before you assemble the components:

- ☐ different types of screwdrivers
- ☐ a tape measure
- ☐ a level
- ☐ pliers such as side cutters and long-nose pliers
- ☐ an ECOS 1023 POW-R-MATE or similar type of test meter
- ☐ appropriate cable terminating tools
- ☐ a drill for making lead holes for screws

Site and inventory inspection

- ☐ Confirm that the site is prepared and the external equipment is installed correctly.
- ☐ Confirm that all items on the packing slip have been received.
- ☐ Inspect all equipment for physical damage. Report any damage to your supplier.

System components

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This section contains information on the following topics:

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Ethernet switch (customer-supplied)	50
Power over LAN unit (customer-supplied, optional)	50
19-inch rack (customer-supplied)	51
Rack mount installation kit (NTTK09AA)	53
Miscellaneous components	53

Reference list

The following are the references for this section:

- *System Overview* (553-3023-101)
- *Data Networking Guidelines* (553-3023-103)
- *Circuit Card Reference* (553-3023-211)

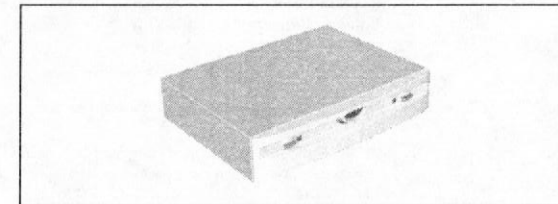
Introduction

This chapter identifies the hardware and software components required for installing Succession CSE 1000 system. The Succession CSE 1000 system contains the following components:

- Call Server (NTDU06) (p. 32)
- Signaling Server (NTDU27) (p. 35)
- Voice Gateway Media Card (p. 37)
- Media Gateway (NTDU14) (p. 40)
- Media Gateway Expansion (NTDU15) (optional) (p. 45)
- Internet Telephones (p. 48)
- Ethernet switch (customer-supplied) (p. 50)
- Power over LAN unit (customer-supplied, optional) (p. 50)
- 19-inch rack (customer-supplied) (p. 51)

Call Server (NTDU06)

Figure 2
Call Server



Power

There is a power status indicator (Nortel Networks logo) on the front cover of the Call Server. When the Nortel Networks logo is illuminated, the power is on. The power cord connector is located on the upper left-hand corner on the rear of the Call Server. The Power On/Off switch is beside this connector. The power supplies are factory installed and not customer replaceable. The Succession CSE 1000 system does not support dc input.

Cooling

The Call Server has forced air cooling. The fan runs whenever the Server is on. The air flow is side-to-side.

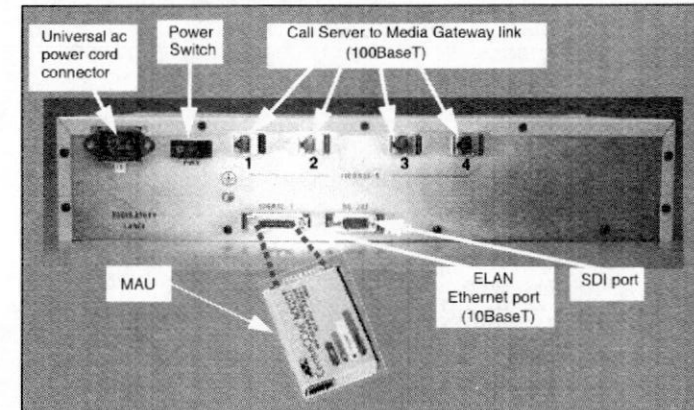
Card slots

The NTDU06 Call Server has one card slot. The NTDK20FA or later Succession System Controller (SSC) card must be in this slot.

Connectors

Figure 3 on page 34 shows the location of connectors on the back of the Call Server.

Figure 3
Cable connectors on the back of the Call Server



The four ports (1, 2, 3, 4) connect the Call Server to the Media Gateway (CS to MG link). You can connect a CS to MG link point-to-point with a cross-over cable or connect the link through a data network switch.

The ELAN (10BaseT) port uses an industry-standard Medium Access Unit (MAU), which is included with the cable kit. The ELAN cable is inserted into the MAU. The ELAN port is used as a connection point to interface with management software applications, for signaling the Voice Gateway Media Cards (VGMC), and other applications, such as CallPilot.

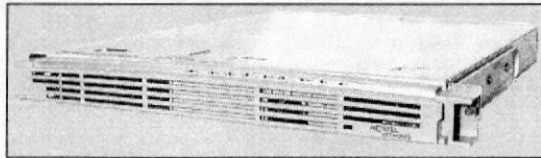
The SDI connector on the rear panel of the Call Server interfaces to three pre-programmed SDI ports on the NTDK20 SSC which provides TTY ports 0, 1, and 2. You can use all three SDI ports as either modem or maintenance ports for TTY terminals. A three-port SDI cable is included in the cable kit.

Signaling Server (NTDU27)

The Signaling Server provides signaling interfaces to the IP network using software components that run on a real-time operating system. You can install Signaling Servers in a load-sharing redundant configuration for higher scalability and reliability. The Signaling Server is equipped with several software components:

- Internet Telephone Terminal Proxy Server (TPS)
- H.323 Signaling Gateway (virtual trunk)
- H.323 Gatekeeper
- Element Management web server

Figure 4
Signaling Server



Power

The power cord connector is located on the left-hand corner on the rear of the Signaling Server. When the green power LED, on the left-hand side is illuminated, the power is on. The Power On/Off switch is on the front faceplate. The power supplies are factory installed and not customer replaceable.

Cooling

The Signaling Server has forced air cooling. The fan runs whenever the Server is on. The air flow is front-to-back.

Card slots

The Signaling Server has no available card slots.

Connectors (front)

Figure 5 shows the DB-9 serial port, the CD-ROM and floppy drives on the front of the Signaling Server. The front DB-9 serial port can support a login session for Command Line Interface (CLI) management.

Figure 5
Connectors on the front of the Signaling Server

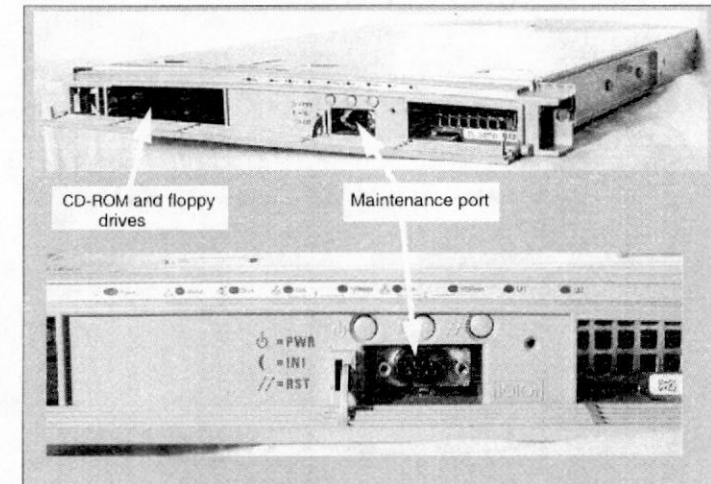
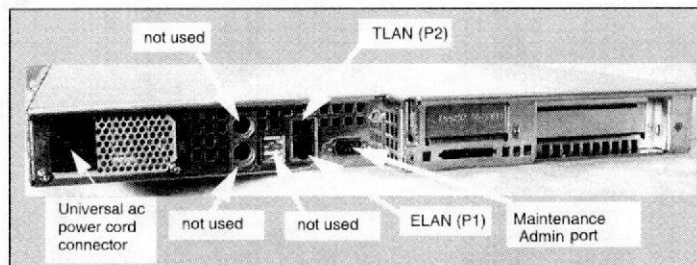


Figure 6 on page 37 shows the cable connectors on the back of the NTDU27 Signaling Server.

Figure 6
Connectors on the back of the Signaling Server



Connectors (rear)

The ac power cord connector is at the back of the Signaling Server on the left side.

The TLAN port (P2) connects the Signaling Server to a TLAN port on a Layer 2 Switch.

The ELAN port (P1) connects the Signaling Server to an ELAN port on a Layer 2 Switch.

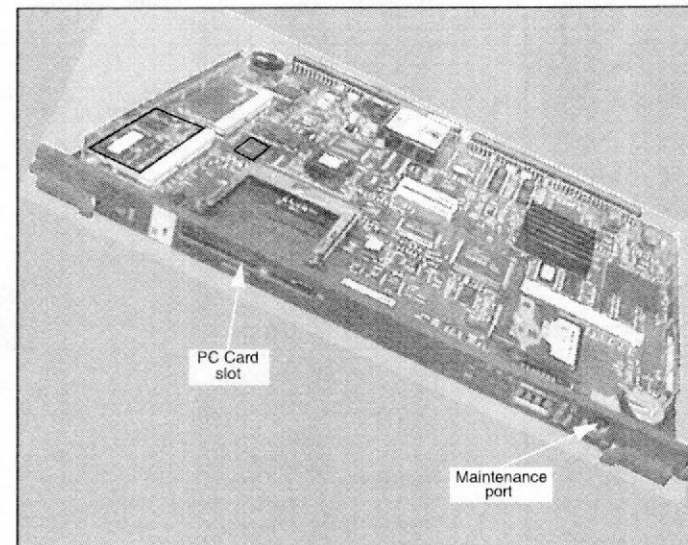
The maintenance port connects the Signaling Server to a maintenance and administration terminals.

There are three ports not used for any Succession CSE 1000 function. Do not plug any device into these ports.

Voice Gateway Media Card

The Voice Gateway Media Card (VGMC) connects an IP and circuit-switched device using Digital Signal Processors (DSPs) for either line or trunk applications. The DSPs, enabled by a Voice Gateway application, performs media transcoding between IP voice packets and circuit-switched devices.

Figure 7
Voice Gateway Media Card



The VGMC is available as an eight or 32-port card. The VGMC also provides echo cancellation and compression/decompression of voice streams.

Power

The VGMC is powered through Media Gateway chassis or Media Gateway Expansion chassis backplanes.

Cooling

Cooling is provided by the Media Gateway chassis or Media Gateway Expansion chassis.

Card slots

The VGMC is installed in the Media Gateway or Media Gateway Expansion card slots.

Connectors (front)

The PC Card slot can be used to deliver software or for additional storage.

The maintenance port provides access to the Media Card for OA&M purposes.

Connectors (rear)

The ITG Card Adapter (ELAN, TLAN, RS232, L-adapter) provides connections to the VGMC through the connector labelled Card 1, Card 2, Card 3, or Card 4 that corresponds to the VGMC location. See Figure 56 on page 135.



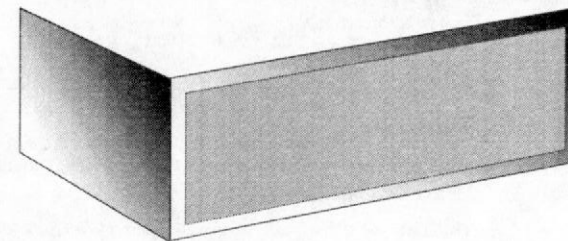
CAUTION

Do not connect maintenance terminals or modems to the faceplate and I/O panel DB-9 male serial maintenance port at the same time.

Media Gateway (NTDU14)

Figure 8 shows the Media Gateway chassis.

Figure 8
Media Gateway chassis



Power

There is a power status indicator (Nortel Networks logo) on the front cover of the Media Gateway. When the Nortel Networks logo is illuminated, the power is on. The power cord connector is located on the upper left-hand corner of the back of the Media Gateway. The Power On/Off switch is located behind the front cover, see Figure 11 on page 44.

Cooling

The Media Gateway has forced air cooling. The fans inside it are controlled by temperature levels. It runs at a reduced speed at room temperature. The air flow is side-to-side.



CAUTION
Damage to Equipment
Do not block equipment ventilation openings.

Card slots

The NTDU14 Media Gateway shown in Figure 8 on page 40 has four usable universal card slots, 1 to 4. Slot 0 is dedicated to the NTDK20FA or later SSC card.

The following cards are supported in slots 1-4 for flexible configurations of:

- Trunk/Analog and Digital Line cards
 - Digital Trunk cards, maximum of four cards in each Media Gateway
- Note:** Each Media Gateway with a digital trunk must have one clock controller.
- Analog Trunk Cards, with a maximum of four installed in each Media Gateway
- Analog Line Cards, with a maximum of four installed in each Media Gateway
- Digital Line cards, with a maximum of four cards in each Media Gateway
- Voice Gateway Media Cards, with a maximum of four installed in each Media Gateway
- Application Cards, can be installed in each Media Gateway

Connectors

The 25 pair cable connectors on the back of the Media Gateway (see Figures 9 and 10) and the Media Gateway Expansion provide access to the cross-connect terminal (main distribution frame) through 25-pair cables.

Figure 9
25-Pair Cable Connectors on the back of the Media Gateway

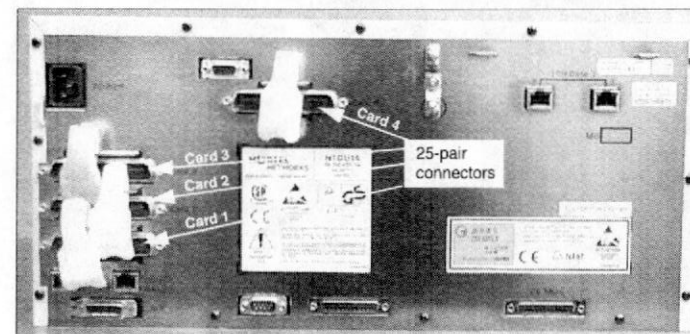
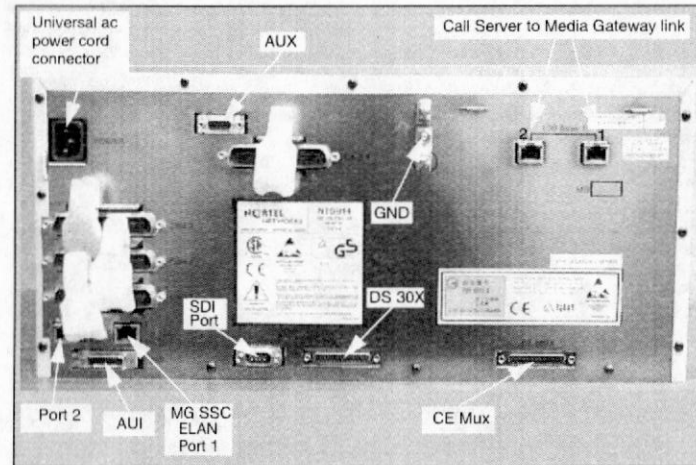


Figure 10
Connectors on the back of the Media Gateway



The AUX port connects a Power Failure Transfer Unit (PFTU), to the Succession CSE 1000.

The CS to MG link ports connects the Media Gateway to the Call Server. Port 1 and port 2 correspond with bulkhead connectors 1 and 2, shown in Figure 11 on page 44.

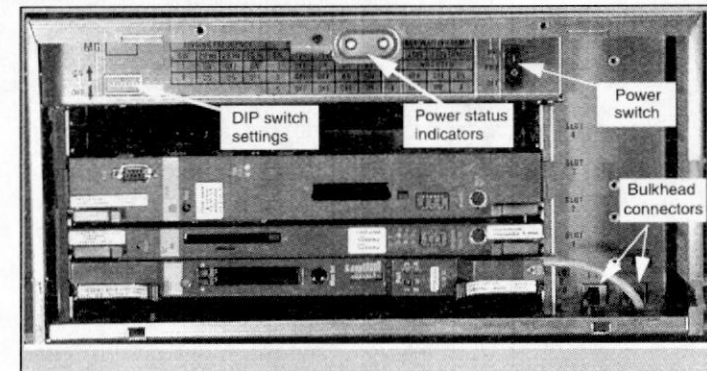
The ELAN port 1 connects the Media Gateway SSC card to the ELAN. ELAN port 2 is not used.

The AUI (Attachment Unit Interface) is used with earlier version SSC cards which require a MAU.

The SDI connector in the Media Gateway provides interfaces for three SDI ports using a three-port SDI cable.

The DS-30X and CE-MUX cable connects the Media Gateway to the Media Gateway Expansion.

Figure 11
Front of the Media Gateway and Branch Office



DIP switches are available to set the ringing voltages, ringing frequencies, and message waiting voltages.